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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

NALEVANKO, CHRISTOPHER R

ART UNIT PAPER NUMBER

2611

DATE MAILED: 08/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/540,178

Applicant(s)

VOGEL ET AL.

Examiner

Christopher R Nalevanko

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 20-26 is/are pending in the application.
- 4a) Of the above claim(s) 17-19 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-14 and 26 is/are allowed.
- 6) ☒ Claim(s) 20-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-14 and 20-26, drawn to method of improving fault tolerance with two signal paths and pinging operations, classified in class 725, subclass 146.
 - II. Claim 17-19, drawn to fault tolerance in a video switch asserting a switch controller ready signal and self diagnostic tests, classified in class 370, subclass 220
- The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention II has separate utility such as determining the operational status of a switch component by itself, as opposed to fault recovery in a headend. See MPEP § 806.05(d). Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Steven M. Hertzberg on 08/05/2004 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-14 and 20-25. Affirmation of this election must be made by applicant in replying to this Office action. Claims 17-19 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see pages 14-23, filed 05/27/2004, with respect to Claims 1-14 have been fully considered and are persuasive. The 35 USC 103(a) rejection of Claims 1-14 has been withdrawn.
2. Applicant's arguments filed 05/27/2004 have been fully considered but they are not persuasive. Applicant argues, "Edmonds is completely silent with respect to a video switch having a plurality of I/O ports, as well as sending pinging messages between the I/O ports for testing a switch matrix of a head-end controller" (page 25 lines 8-11). Examiner asserts that Edmonds clearly shows a switch (fig. 5 item 210) with a plurality of communicable connections between electronic components, hence I/O ports. Furthermore, Edmonds is merely used to show the switch and corresponding controllers. Deitz is used to show the pinging operation of the system. Dietz shows sending periodic pinging commands from an origination I/O port to a destination I/O port of a plurality of ports via a primary controller for testing a primary controller (col. 7 lines 30-64). Dietz further shows that the primary and secondary controllers communicate between each

other indicating failure or normal operation (col. 6 lines 55-67, col. 7 lines 1-7), as well as each port being the origination and destination ports. This would require one controller to send the other controller status information and an acknowledgement signal. Furthermore, it is inherent that there must be some register that stores that operational status of the ports or transmission. Finally, Mchale is used to show the timer mechanism and a video switch, alleviating the Official Notice cited by the Examiner. Mchale shows setting a time of said origination port upon receiving a polling command and resetting the timer when the timer or the port elapses before the controller sends an acknowledgement (page 7 section 0092, page 8 sections 0105-0106). Mchale shows that timer circuitry (timer 117) is checked by a processor to indicate if an adequate response has been detected from a port. Furthermore, Mchale shows that these steps are repeated (page 8 section 106). Mchale also shows that a switch can be used for video data (page 1 section 0009). All other arguments are moot in light of the new rejection.

3. Applicant's arguments filed 05/27/2004 have been fully considered but they are not persuasive. Applicant's arguments with regards to Claim 22 have been discussed above, with regards to Claim 20.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 20-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Edmonds et al in further view of Deitz et al and Mchale et al.

Regarding Claim 20, Edmonds shows a distribution system having provider equipment (fig. 5 items 214 and 218) and associated subscriber equipment (fig. 5 items 200 and 202), and a method of improving fault tolerance at a switch comprising a plurality of I/O ports and a plurality of switch controllers for providing content from provider to subscriber (fig. 5, col. 7 lines 25-55, "directors and Ethernet switches"). As seen by figure 5, the Ethernet switches contain multiple input and output ports, as seen by the connections to buses 204, 206, directors 216, 220, web servers 214, 218, and computers 200, 202. Furthermore, the "directors" in the system of Edmonds control data flow and switching operations. Also, it is inherent that contained in the switch there is some sort of controlling mechanism. Edmonds fails to show the periodic pinging command from input ports to destination ports. Dietz shows sending periodic pinging commands from an origination I/O port to a destination I/O port of a plurality of ports via a primary controller for testing a primary controller (col. 7 lines 30-64). Dietz further shows that the primary and secondary controllers communicate between each other indicating failure or normal operation (col. 6 lines 55-67, col. 7 lines 1-7), as well as each port being the origination and destination ports. This would require one controller to send the other controller status information and an acknowledgement signal.

Furthermore, it is inherent that there must be some register that stores that operational status of the ports or transmission. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Edmonds with the pinging system of

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Dietz so that the system could maintain a status of the operation of each switch and switch controller.

Both Edmonds and Dietz fail to show a timer mechanism and resetting the timer after a time elapses. Also, Edmonds and Dietz fail to show that the system and switches can be used for video data. Mchale shows setting a time of said origination port upon receiving a polling command and resetting the timer when the timer or the port elapses before the controller sends an acknowledgement (page 7 section 0092, page 8 sections 0105-0106). Mchale shows that timer circuitry (timer 117) is checked by a processor to indicate if an adequate response has been detected from a port. Furthermore, Mchale shows that these steps are repeated (page 8 section 106). Mchale also shows that a switch can be used for video data (page 1 section 0009). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Edmonds and Dietz with the timer system and video switch of Mchale in order to check for malfunctioning ports and provide an efficient, convenient means of providing video data.

Regarding Claim 21, Deitz shows the ability to switch over to a secondary controller in the event of an error (col. 7 lines 30-63, col. 8 lines 1-20). Mchale shows initiating a switchover event in an instance where no acknowledgement has been received prior to a timer elapsing on multiple ports (page 8 sections 0105-0105, polling interval expiring to signal switch to next inactive data line).

Regarding Claim 22, Edmonds shows a distribution system having provider equipment (fig. 5 items 214 and 218) and associated subscriber equipment (fig. 5 items

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200 and 202), and a method of improving fault tolerance at a switch comprising a plurality of I/O ports and a plurality of switch controllers for providing content from provider to subscriber (fig. 5, col. 7 lines 25-55, "directors and Ethernet switches"). As seen by figure 5, the Ethernet switches contain multiple input and output ports, as seen by the connections to buses 204, 206, directors 216, 220, web servers 214, 218, and computers 200, 202. Furthermore, the "directors" in the system of Edmonds control data flow and switching operations. Also, it is inherent that contained in the switch there is some sort of controlling mechanism. Edmonds fails to show the periodic pinging command from input ports to destination ports. Dietz shows sending periodic pinging commands from an origination I/O port to a destination I/O port of a plurality of ports via a primary controller for testing a primary controller (col. 7 lines 30-64). Dietz further shows that the primary and secondary controllers communicate between each other indicating failure or normal operation (col. 6 lines 55-67, col. 7 lines 1-7), as well as each port being the origination and destination ports. This would require one controller to send the other controller status information and an acknowledgement signal. Dietz also shows setting an error message in response to a polling command (col. 7 lines 39-44). Furthermore, it is inherent that there must be some register that stores that operational status of the ports or transmission. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Edmonds with the pinging system of Dietz so that the system could maintain a status of the operation of each switch and switch controller.

Both Edmonds and Dietz fail to show a timer mechanism and resetting the timer after a time elapses. Also, Edmonds and Dietz fail to show that the system and switches can be used for video data. Mchale shows setting a time of said origination port upon receiving a polling command (page 7 section 0092, page 8 sections 0105-0106). Mchale shows that timer circuitry (timer 117) is checked by a processor to indicate if an adequate response has been detected from a port. Furthermore, Mchale shows that these steps are repeated (page 8 section 106). Mchale also shows updating the status of the ports based on the port failing to respond in a designated amount of time (pages 8 and 9 section 0108, “updates activity table”). Mchale also shows that a switch can be used for video data (page 1 section 0009). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Edmonds and Dietz with the timer system and video switch of Mchale in order to check for malfunctioning ports and provide an efficient, convenient means of providing video data.

Regarding Claim 23, Deitz shows the ability to switch over to a secondary controller in the event of an error (col. 7 lines 30-63, col. 8 lines 1-20). Mchale shows initiating a switchover event in an instance where no acknowledgement has been received prior to a timer elapsing on multiple ports (page 8 sections 0105-0105, polling interval expiring to signal switch to next inactive data line).

Regarding Claim 24, Deitz shows the use of a ‘heart beat’ signal that sends pinging commands to a plurality of ports (col. 7 lines 30-43).

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Regarding Claim 25, Mchale shows polling ports successively (page 8 section 0106, "selects the next inactive and non-dedicated data line as indicated in the status column of activity table at step 316 and returns to step 304).

Allowable Subject Matter

5. Claims 1-14 and 26 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: The prior art of record fails to show or fairly suggest "a plurality of head-end controllers couple to each server module of said plurality of server modules via at least two signal paths, wherein each communication between a head-end controller and a server module is coincidentally sent through the at least two signal paths" as claimed in Claim 1.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Natarajan et al U.S. Patent No. 6,538,988 discloses an end-to-end bi-directional keep-alive using virtual circuits.

Cooper U.S. Patent No. 6,182,238 discloses a fault tolerant task dispatching.

Duso et al U.S. Patent No. 6,625,750 discloses hardware and software failover service for a file server.

Le et al U.S. Patent No. 6,145,089 discloses a server fail-over system.

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Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher R Nalevanko whose telephone number is 703-305-8093. The examiner can normally be reached on M-F 8-5.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Grant can be reached on 703-305-4755. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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